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FASSE PATENT ATTORNEYS, P.A. P.O. BOX 726 HAMPDEN, ME 04444-0726			BRUENJES, CHRISTOPHER P	
			ART UNIT	PAPER NUMBER
			1772	
DATE MAILED: 09/30/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/724,311	SCHMITZ ET AL.
	Examiner	Art Unit
	Christopher P. Bruenjes	1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) ____ is/are allowed.
- 6) Claim(s) 1-39 is/are rejected.
- 7) Claim(s) ____ is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 28 November 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. 09/830,625.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 20040506.

- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: ____.

DETAILED ACTION

Claim Objections

1. Claim 38 is objected to because of the following informalities: In line 3, the word "vapor" appears to be missing between "water" and "permeable" since the entire claim set and specification is concerned with the permeability of the film with regard to water vapor and not water and because the second and first film sections are being compared in this claim and so both sections should be referring to the permeability of the same material. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 8, 12, 20, and 23-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 8, the limitation "said plural layers are not all laminated together" renders the claim vague and

indefinite because it is not understood how the plural layers can be considered a film if the layers are separated and not laminated together. Clarification is required.

Regarding claim 20, the limitation "said insulation is a flossy fleece of said insulation material" renders the claim vague and indefinite because it is not understood what is being claimed. Is the insulation a flossy fleece of itself? It is not understood how something can be a flossy fleece of itself. Clarification is required.

Regarding claim 12, the limitation "poly (2,2-bistrifluoromethyl-4,5-difluoro-1,3-dioxole) (PDD) / polytetrafluoroethylene (PTFE)" renders the claim vague and indefinite because it is not understood if the "/" means that the film comprises one or the other, or a blend of the two, or if the two or a copolymerization. Clarification is required.

Regarding claims 23 and 36, the preamble limitation "in an air vehicle including an outer skin, an inner trim component that is arranged spaced from said outer skin with an interspace therebetween and that bounds an interior cabin therein" renders the claim vague and indefinite. It is not understood if the "air vehicle" is being claimed, or if the "air vehicle" is merely the intended use or location of the insulation arrangement. Also if the air vehicle is being claimed, then it

is not understood if the air vehicle is considered admitted prior art as in a Jepson claim and that the improvement of the insulation arrangement is the improvement of the air vehicle or if the air vehicle claimed is not considered admitted prior art and that the Jepson claim only refers an insulation arrangement including an insulation packet as the admitted prior art in the claim with regards to the Jepson claim format. Clarification is required.

Claims 24-35 and 37-39 are rejected as being dependent on rejected claims 23 and 38.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 13, 16-17, 22-29, and 35-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Norvell (USPN 5,472,760).

Regarding claim 13, Norvell anticipates an insulation packet comprising an insulation material and a film that completely surrounds and encases said insulation material that

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is formed completely of a permeable film, partially a permeable film and a semi-permeable film, or partially a permeable film and an impermeable barrier film (col.3, 1.50-53 and col.5, 1.55-63 and col.6, 1.50-60). One embodiment taught by Norvell is having a film comprising two films, a permeable film and a water vapor barrier film, in which the water vapor barrier film is oriented toward either the inner cabin (col.5, 1.55-66) or the outer skin of the aircraft depending on the intended use of the insulation packet (col.6, 1.59-60). Note the broadest reasonable interpretation of the diffusion resistance limitations in claim 13 in light of the specification, especially page 20, lines 1-8, is that at least one portion of the film must have the first diffusion resistance and at least one portion of the film must have the second diffusion resistance, but that the two diffusion resistances do not have to be located in the same portion of the film. In this case, the film as described above has a first diffusion resistance with respect to water vapor diffusing through said film outwardly out of said insulation packet in the portion of the film comprising the permeable film and the film also has a second diffusion resistance with respect to water vapor diffusing through said film inwardly into said insulation packet in the portion of the film comprising the impermeable film. The

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impermeable film portion of the film having the second diffusion resistance is greater than the film portion of the film having the second diffusion resistance. Regarding claim 16, the packet includes a first portion that is permeable and second portion that is impermeable to water vapor, therefore having different diffusion resistances. Regarding claim 17, the second diffusion resistance is high enough to prevent water vapor from diffusing through said film inwardly into said insulation packet because it is the diffusion resistance of the water vapor impermeable portion of the film. The first diffusion resistance is low enough to allow water vapor to diffuse through said film outwardly out of said insulation packet because it is the diffusion resistance of the water vapor permeable portion of the film. Regarding claim 22, the film includes a first film portion having said first diffusion resistance having a first film thickness, and a second film portion having said second diffusion resistance and having a second film thickness that is greater than the first film thickness. Regarding claim 23, Note the limitation "in an aircraft including an outer skin, an inner trim component that is arranged spaced from said outer skin with an interspace there between and that bounds an interior cabin therein, and an insulation arrangement including an insulation packet disposed in said interspace" taken in its broadest

reasonable interpretation is a functional or intended use limitation in the preamble of the claim, which receives little patentable weight. The limitation is considered an intended use of the insulation arrangement as being position in an air vehicle having the limitations claimed. In this case, Norvell teaches that the insulation arrangement is used in an air vehicle which inherently has an outer skin, inner trim component and interspace to position the insulation packet. The limitations with regard to the insulation arrangement itself have already been discussed above with regards to claim 13. Regarding claim 24, see above with regards to claim 13. Regarding claim 25, the film includes a first film section and a second film section that are joined with each other along joined edges thereof in order to completely surround or encapsulate the insulation. The film sections have different properties, because one section is permeable to water vapor and the other section is impermeable. Regarding claim 26, the first and second sections respectively consist of different film materials because one is impermeable and the other is permeable to water vapor (col.5, l.21-65). Regarding claim 27, the first film section has a smaller thickness than said second film section. Regarding claim 28, the first and second film sections are on opposite sides of the insulation and is oriented with the first

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film section toward the outer skin and the second film section toward the inner trim component (col.6, 1.49-60). Regarding claim 29, the first film section further has a first gas diffusion resistance coefficient in a first diffusion direction through said first film section from said inner film surface to said outer film surface that is less than the second diffusion resistance coefficient in a second diffusion direction through said second film section from said outer film surface to said inner film surface since the first film section is permeable to gas and the second film section is impermeable to gas.

Regarding claim 35, the second film section is a water vapor barrier that hinders water vapor from permeating into said insulation packet through said second film section because it is impermeable, and said first film section is a water vapor permeable film that allows water vapor to permeate out of said insulation packet through said first film section because it is permeable. Regarding claim 36, the claim incorporates the limitations discussed above in claims 13, 23, and 35 as shown above. Regarding claim 37, the first film section has a greater porosity than said second film section because the first film section is formed of expanded porous PTFE (col.5, 1.21-30) and the second film section is formed of a nonporous impermeable polyester (col.5, 1.60-61). Regarding claim 38, the first film

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section has a more water vapor permeable character than the second film section which is impermeable.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1, 14-15, 18-19, and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norvell (USPN 5,472,760) in view of White et al (USPN 5,398,889).

Regarding claims 1, 14-15, 18-19, and 33, Norvell teaches an insulation packet comprising an insulation material and a permeable film completely surrounding and encasing said insulation material (see abstract) and what is shown above with regards to claims 13 and 17. Norvell fails to teach that at the same location or in the same portion of the film that the film comprises the first and second diffusion resistances with respect to water vapor diffusing through said film respectively in two opposite directions. However, White et al teach that an air conditioning device is used to further dry the insulation packet (col.3, 1.30-32). The air conditioning device produces drier air than the air containing water vapor within the packet, therefore by the laws of thermodynamics the water vapor inside the packet is going to diffuse through the permeable film outwardly from the packet in order to equalize the moisture in the air on the inside and outside of the permeable film. Because the circulating air remains drier than the air within the packet the diffusion resistance is greater flowing into the packet than out of the packet. Also because the insulation packet is placed in the interspace spaced from the skin and inner trim panel the drier circulated air surrounds the entire packet and therefore the diffusion resistance is uniform at all locations on the film.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the applicant's invention was made to provide an air conditioning device that circulates dry air, as taught by White et al, to the air vehicle of Norvell, in order to increase vapor drying of the insulation packet. The circulating dry air as taught by White et al enables the permeable film of Norvell to have a higher diffusion resistance with regard to water vapor flowing inwardly into the insulation packet than outwardly from the insulation packet based on the laws of thermodynamics, which are well known to one of ordinary skill in the art.

Regarding claims 30-32, Norvell teaches all that is claimed in claim 23, Norvell fails to teach a stringer in the insulation arrangement. However, White et al teach that stringers are added to air vehicles in order to provide strength for many forms of loading by providing bending and buckling stiffness for skin (col.4, l.63-68). White et al also teach that the stringers have a number of holes through them spaced along its length to allow flow of condensate downwardly along the inside surface of the skin (col.5, l.1-5). Structurally holes through supports for a stringer are the same thing as a plurality of spacer members supporting a stringer. The stringers form integrally with the outer skin, therefore it would have been

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obvious to one skilled in the art that the insulation packet would have to lay on the stringers if attached to the outer skin. One of ordinary skill in the art would have recognized that an air vehicle would have stringers with gaps between the stringer and outer skin in order to provide the air vehicle with added strength by providing bending and buckling stiffness and the gaps would be formed in order to allow condensate to flow down along the inside surface of the outer skin as taught by White et al. One of ordinary skill in the art would have also recognized that the insulation packet would lay on the stringers because it was attached to the outer skin and the stringers and skin are integrally formed leaving no where else for the insulation packet.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to add a stringer to the air vehicle of Norvell with an air gap formed between the stringer and outer skin and lay the insulation packet of Norvell on the stringer in order to provide the air vehicle with more strength, the condensate a way to flow down the outer skin, as taught by White et al, and lay the insulation packet the only place possible when it is attached to the outer skin of the air vehicle.

5. Claims 2-4, 6, and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norvell in view of White et al as applied to claim 1 above, and further in view of Mizobe (USPN 5,665,146).

Norvell and White et al teach all that is claimed in claim 1 as shown above, but fail to teach a film having a gradient of porosity, material composition, and/or hydrophilicity and hydrophobicity through the thickness. However, Mizobe teaches using a plurality of stages of water-vapor permeable waterproof films in order to remove moisture from a sealed container, such as the sealed insulation packet of Norvell and White et al, more efficiently (see abstract). Regarding claims 6 and 8, the film representing the plurality of stages of Mizobe is a multilayered film in which the layers are not laminated and air gaps are formed between the layers. Regarding claims 2-4, Mizobe goes on to teach that by using multiple stages with air gaps the film is set up as a gradient so that moisture is exhausted outwardly (col.2, l.21-37). Therefore, the film has a directionally selectively permeable film in which the diffusion resistance is greater flowing inwardly than outwardly. Mizobe goes on to teach that the individual layers or stages have different porosities and therefore, porosity varies through the thickness thereof (col.8, l.10-17), or different materials forming a

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temperature gradient by varying the material composition through the thickness (col.10, 1.8-13). Also, the formation of these varying porosities inherently forms a film having a varying hydrophilicity or hydrophobicity through the thickness, since a layer having larger pores is more hydrophilic than a layer having smaller pores. Regarding claims 9-10, the film has a temperature-dependent porosity and water transport characteristic with a lower porosity or water transport at a lower temperature (col.2, 1.30-38). One of ordinary skill in the art would have recognized that Norvell, White et al and Mizobe are analogous insofar as all three references are concerned with dehumidifying water tight containers, whether that container is for containing electrical parts or insulation.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to substitute the multi-layered or multi-staged film of Mizobe for the films of Norvell and White et al in order to form an insulation packet that accelerates dehumidifying and moisture-pressure adjusting capabilities while preventing fast inflow of moisture from outside the packet, when the moisture level inside the packet becomes less than the outside, as taught by Mizobe.

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6. Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norvell, White et al, and Mizobe as applied to claims 1 and 6 above, and further in view of Diehl (USPN 4,765,915).

Norvell, White et al, and Mizobe teach all that is claimed above, especially with regard to a packet having a film that has varying porosity, material composition, and/or hydrophilicity and hydrophobicity through the thickness of the film. The three references fail to teach the film being a single layered film or a unitary multi-layered film having no gaps between said layers. However, Diehl teaches that films for selective permeability having varying porosity through the thickness thereof are formed as single layered films by heating one surface of the film in order for the porosity of that surface to be larger than the opposite surface and a uniform gradient between the two surfaces (col.5, 1.1-15). Also the single layered film can have an additional even less porous film applied to the denser surface in order to increase the selectivity of the film (col.5, 1.35-56). This single layered film or multilayered film without air gaps are substituted for multilayered films such as the film taught by Mizobe since the film will take up less space than a multilayered film having air gaps. One of ordinary skill in the art would have recognized that Diehl is analogous art insofar as

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it is concerned with providing a membrane or film that selectively differentiates the moisture values from one side of a the film to the other, as also described in Mizobe.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to form the film of Norvell, White et al, and Mizobe as a single layered or multi-layered film without air gaps in order to perform the same function without the increased space required by a film containing multiple air gaps between the layers.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Norvell in view of White et al as applied to claim 1 above, and further in view of Hoeschele et al (USPN 4,868,062).

Norvell and White et al teach all that is claimed in claim 1 as shown above, but fail to teach using polyetherimide in the formation of the encapsulating film. However, Norvell teaches that the film is formed of a water resistant material, such as one of a variety of commercially available fabrics employing a laminate of breathable fluoropolymer, such as porous PTFE, polyurethane, etc. (col.3, l.58-64). Hoeschele et al teach that although porous PTFE is commercially successful, it is rather

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expensive. Hoeschele et al goes on to teach that porous polyetherimide is substituted for porous PTFE as a waterproof film with water vapor permeability having good physical properties in order to lower the cost of formation (col.1, l.6-20). One of ordinary skill in the art would have recognized that Norvell and Hoeschele et al are analogous insofar as both references are concerned with forming waterproof, water vapor permeable films.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to substitute the porous polyetherimide film of Hoeschele et al for the porous PTFE film of Norvell, in order to lower cost in the formation of the product without sacrificing the permeability and physical properties of the film, as taught by Hoeschele et al.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Norvell in view of White et al as applied to claim 1 above, and further in view of Nemser (USPN 5,914,154).

Norvell and White et al taken as a whole teach all that is claimed in claim 1 as shown above, but fail to teach that the film comprises a PDD/PTFE. Norvell teaches that the film is formed of porous PTFE. Nemser teaches that a copolymer of PDD

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and TFE is substantially hydrophobic and oleophobic. Therefore the gas permeable film is insoluble and will not swell in a wide range of liquids, which preserves the structural integrity and dimensional stability while in contact with many different liquid compositions (col.5, 1.23-30). One of ordinary skill in the art would have recognized that the preservation of structural integrity and dimensional stability while in contact with liquid compositions is beneficial to the film of Norvell and White et al, because of leaks that lead to the dripping of different liquids within the interspace that the packet is placed. One of ordinary skill in the art would have recognized that Norvell and Nemser are analogous insofar as both references are concerned with forming gas permeable waterproof films.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to substitute the PDD/TFE copolymer of Nemser for the PTFE of Norvell in order to form a film that preserves its structural integrity and dimensional stability while in contact with many different liquid compositions, as taught by Nemser.

9. Claims 20-21 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norvell (USPN 5,472,760) in view of Stahlke et al (USPN 5,126,380).

Norvell teaches all that is claimed in claims 13 and 23 as shown above and that the insulation packet comprises insulation surrounded by a film. Norvell also teaches that the insulation material is constructed from any material used in vehicle insulation, but fails to teach using polyphenylene sulfide as the insulation material. However, Stahlke et al teach uses of polyphenylene sulfide in the form of structural foam (col.1, 1.1-15). The polyphenylene sulfide is used in the aviation vehicle market for thermal insulation, because it has the properties of high heat resistance, rigidity, chemical resistance, weight reduction, thermal insulation and low flammability. For air vehicle insulation, the material used must have weight reduction, be thermal insulating, chemical resistant, especially towards absorption of water, and low flammability, which is very important in air vehicles. One of ordinary skill in the art would have recognized that polyphenylene sulfide is used as the insulation material in air vehicles because it has low flammability, chemical resistance, weight reduction, and thermal insulation, as taught by Stahlke et al, which are all properties that enhance the safety and economics of an air vehicle.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made

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to use polyphenylene sulfide as the insulation material in the insulation packet of Norvell, in order to enhance the safety and economics of an air vehicle based on the properties of polyphenylene sulfide which include low flammability, chemical resistance, weight reduction, and thermal insulation as taught by Stahlke et al.

10. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Norvell (USPN 5,472,760) in view of Mizobe (USPN 5,665,146).

Norvell teaches all that is claimed in claim 36 as shown above, but fails to explicitly teach that the water vapor permeability of the water vapor permeable film of Norvell is temperature-dependent. However, Mizobe teaches that a porous polytetrafluoroethylene is used as a waterproof, water vapor permeable film, such as TEFLON (col.4, 1.50-53), which is the same film used to form the waterproof, water vapor permeable film of Norvell (col.4, 1.1-16). Mizobe also teaches that the film water vapor permeability of a porous polytetrafluoroethylene film is temperature dependent and that the film is more permeable at a higher temperature and less permeable at a lower temperature (col.5, 1.20-40). One of ordinary skill in the art would have recognized that porous

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polytetrafluoroethylene films have temperature-dependent water vapor permeability, as taught by Mizobe.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made that the film encasing the insulation of Norvell formed from porous PTFE has temperature-dependent water vapor permeability, in which the permeability increases with higher temperature and decreases with lower temperature, as taught by Mizobe.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Rosenmayer (USPN 6,605,381); Lasko et al (USPN 6,277,104); Fuglister (USPN 5,901,034).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher P. Bruenjes whose telephone number is 571-272-1489. The examiner can normally be reached on Monday thru Friday from 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon can be reached on 571-272-1498. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christopher P Bruenjes
Examiner
Art Unit 1772

CPB
CPB
September 22, 2005


HAROLD PYON
SUPERVISORY PATENT EXAMINER
1772

9/28/05